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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/546,006

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EXAMINER

HU, HENRY S

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

10/29/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/546,006	Applicant(s) LEE ET AL.	
	Examiner HENRY S. HU	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Election of July 21, 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 9-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-17 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to **Election** filed on July 21, 2008, which is response to Restriction requirement filed on June 20, 2008. Applicants' **Pre-Amendment** and one **IDS** (1 page) are filed so far. This Application is a **371/PCT/JP04/01868**. With such pre-amendment, **Claims 2-8, 11 and 13-17 were amended, while no claim was cancelled or added**. To be more specific, the involved Claims 2-8, 11 and 13-17 were amended in **three** ways as: (A) to remove internal periods, (B) to correct a typographical error and (C) to eliminate improper multiple dependency.

Applicant's Election of Group I, Claims 1-8 is traversed with remarks on page 1.

The traversal is on the ground(s) that no lack of unity objection is raised for PCT application. It would thereby not place an undue burden to search and examine the non-elected Group II (Claims 9-11 (the process of making) and Claims 12-17 (the product made by the process)) with the elected Group I. This is not found persuasive because Group I is directed to **a heat-meltable fluoropolymer composite composition** comprising two components including: (A) **a heat-meltable fluoropolymer fine powder** and (B) **a layered-compound** organically modified with tetraphenyl phosphonium ions. As discussed earlier and also below, such a composite composition is either obvious or anticipated by following: **US 5,962,553 (and its equivalent WO 98/10012) to Ellsworth and US 6,841,211 to Knoll et al.**, each individually or in combination.

2. The structural elements are mutually exclusive and the search terms are also mutually exclusive, thus they indeed create an undue burden on the Examiner. The requirement is still deemed proper and is therefore made FINAL. The examiner **accepts Applicants' one drawing sheet with Figures 1-2** (a brief description is on page 6). **Claims 1-17 with a total of three independent claims** (Claims 1, 9 and 12) are now pending, while non-elected Claims 9-11 and 12-17 (Group II) are withdrawn from consideration by the examiner. An action follows.

Specification

3. The disclosure is objected to because of the following informalities:

On **page 6** at line 23-24, **page 7** at line 1 and maybe throughout specification, the use of “EPE” and “PCTFE” may be wrong for the involving copolymers. Rewriting may be needed.

Claim Objections

4. **Claims 3, 9 and 12 are objected to** because of the following informalities:

(a) On **Claim 3** at line 3, the language as “a polymer or copolymer of **a monomer selected from the group consisting of**” may be improper. A correction to “a polymer or copolymer of **at least a monomer selected from the group consisting of**” may be needed according to MPEP.

(b) On **Claim 9** and **Claim 12**, **rewriting is needed** for clarification with the language “**step**” instead of “process”. Otherwise, it may be confusing which process is indeed involved. Accordingly, the process of making in Claim 9 will need two sequential **steps** including step (I) and then step (II) since the language “comprising” is applied. Same problem is also found on Claim 12.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1796

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. The limitation of parent **Claim 1** in present invention relates to **a heat-meltable fluoropolymer composite composition** comprising two components including: (A) **a heat-meltable fluoropolymer fine powder** and (B) **a layered-compound organically modified with tetraphenyl phosphonium ions**.

*See other limitations of dependent **Claims 2-8**.*

8. **Claims 1-8 are rejected** under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Ellsworth (US 5,962,553 and its equivalent WO 98/10012)**.

Regarding “**heat-meltable fluoropolymer composite composition**” limitation of parent **Claim 1**, **Ellsworth** in US and WO patents has disclosed the preparation of nanocomposites by **melt-blending a melt processable polymer** having a high melt processing temperature **and an organophosphonium cation modified layered clay** (abstract, line 1-3; column 2, line 17-36;

Art Unit: 1796

column 3, line 19-44). According to Ellsworth's disclosure, said polymer can be either non-fluorinated polymer or the claimed **fluoropolymer** (see column 4, line 34 – column 7, line 67), while said organophosphonium cation can be the claimed **tetraphenylphosphonium type** since **both R₁ and R₂ in the formula R₁P⁺(R₂)₃ can be phenyl and/or substituted phenyl** (see column 3, line 32-38).

9. Although nanocomposite final product is formed and the starting fluoropolymers can be crystalline thermoplastics or amorphous polymers (see column 4, line 48-60), Ellsworth is still silent about **using the starting fluoropolymer to be in the form as fine powder**. In light of the fact that the prior art and the present invention recite substantially identical heat-melting process for mixing fundamentally the same two components, a reasonable basis exists to believe that such a composite composition of the invention inherently possess the same function and/or properties. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to Applicants to show otherwise. *In re Best*, 195 USPQ 430 (CCPA 1977).

It has been held that where applicant claims a composition in terms of function, property or characteristic where said function is not explicitly shown by the reference and where the examiner has explained why the function, property or characteristic is considered inherent in the prior art, it is appropriate for the examiner to make a rejection under **both** the applicable section of 35 USC 102 **and** 35 USC 103 such that the burden is placed upon the applicant to provide clear evidence that the respective compositions do in fact differ. *In re Best*, 195 USPQ 430, 433 (CCPA 1977); *In re Fitzgerald et al.*, 205 USPQ 594, 596 (CCPA 1980).

10. Regarding **Claim 2**, the issue as “the form as an agglomerate powder” can be rejected with the same rationale for the rejection of parent Claim 1.

Regarding **Claim 3**, see the disclosure at column 5, line 55 – column 6, line 14 for fluoroplastics.

Regarding **Claim 4**, see a variety of functional groups are shown by Ellsworth in the non-fluorinated polymers from column 4, line 34 to column 7, line 67. Additionally, fluoropolymers as known in the art may contain some functional groups due to the polymerization condition such as using chain transfer agent.

Regarding **Claims 5-6**, see the disclosure from column 3, line 45 to column 4, line 13 and also Figure 1 for using the modified layered clay.

With respect to **Claims 7-8**, Ellsworth is further **silent about two claimed properties such as nitrogen gas transmission and storage modulus**. They are related to inherent properties. The same rationale to reject Claim 1 can be thereby applied here.

11. **Claims 1-8 are rejected** under 35 U.S.C. 103(a) as being unpatentable over **Singh et al. (US 6,057,035) or Knoll et al. (US 6,841,211 B1)**, each individually **in view of Ellsworth (US 5,962,553 and its equivalent WO 98/10012)**.

Regarding “**heat-meltable fluoropolymer composite composition**” limitation of parent **Claim 1**, each of **Singh and Knoll** has disclosed the preparation of some polymer/inorganic nanocomposites by **melt-blending a melt processable polymer and an organophosphonium**

Art Unit: 1796

cation modified layered clay (See Singh at abstract, line 1-3; Figures 2 and 3; column 2, line 26-40; See Knoll at abstract, line 1-7; column 3, line 60 – column 4, line 9; column 4, line 27-45). According to Singh or Knoll's disclosure, said **polymer is found to be non-fluorinated polymer only**, while said organophosphonium cation can be the claimed **tetraphenyl-phosphonium type** (see Singh at Figure 2).

12. Therefore, each of **Singh and Knoll** is silent about **two** things including: **(A) using the starting fluoropolymer and (B) it is in the form as fine powder**. With respect to the silent (A), **Ellsworth** in US and WO patents has taught such a subject matter in the course of making the same type polymer/inorganic (modified layered clay) composite composition. For instance, Ellsworth's polymer can be either non-fluorinated polymer or the claimed **fluoropolymer** (see column 4, line 34 – column 7, line 67). Therefore, fluoropolymer and non-fluorinated polymer are functionally equivalent and interchangeable in this regard.

13. In light of the fact that all involving references are dealing with making the same or similar polymer/inorganic (modified layered clay) composite compositions. Therefore, one having ordinary skill in the art would have found it obvious to modify Singh or Knoll's process of making by **adding some fluoropolymer analogue or replacing non-fluorinated polymer with fluoropolymer analogue** as taught by Ellsworth based on the functional equivalence and interchangeability between fluoropolymer and non-fluorinated polymer. Therefore, more diversified products may be obtained.

Art Unit: 1796

14. With respect to the silent (B) that **polymer or fluopolymer to be in the form as fine powder**, the prior art and the present invention recite substantially identical heat-melting process for mixing fundamentally the same two components, such a composite composition of the invention obviously will possess the same function and/or properties.

15. The discussion of the disclosures of the prior art of Ellsworth for Claims 1-8 of this office action is incorporated here by reference. Remaining dependent **Claims 2-8** are thereby rejected with the above discussion.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a heat-meltable fluoropolymer composite composition comprising two components including: (A) a heat-meltable fluoropolymer fine powder and (B) a layered-compound organically modified with tetraphenyl phosphonium ions: **US 2003/0228463 A1 to Abusleme et al.** has disclosed the preparation of some polymer/inorganic nanocomposites by **melt-blending a melt processable polymer and a lamellar inorganic particle** (see abstract, line 1-8; paragraphs 0006-0019). The lamellar inorganic particles are **silicates or aluminum-silicates containing other metals such as sodium, potassium, iron or lithium** (paragraph 0019). The claimed **layered**-compound (such as clay, mica or graphite) organically modified with tetraphenyl phosphonium ions is not disclosed or suggested.

17. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Vasu Jagannathan, can be reached on (571) 272-1119. The **fax** number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D. Mulcahy/
Primary Examiner, Art Unit 1796

/Henry S. Hu/
Examiner, Art Unit 1796

October 25, 2008